SHARP-TAILED GROUSE HABITAT REQUIREMENTS IN WESTERN SOUTH DAKOTA--A PRELIMINARY REPORT

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INTRODUCTION

Upland game-bird hunting comprises one of the main recreational attractions on the vast area of short grass and mixed grass rangeland in the central United States. On the northern mixed grass prairies where cultivated land is at a minimum, sharp-tailed grouse provide the hunter with many hours of recreation each year. To maintain good hunting with the modern trend toward increased hunting pressure, sharptailed grouse numbers need to be increased. Habitat improvement practices are needed to increase grouse numbers.

In 1964, a project was initiated to determine the habitat requirements of prairie grouse on the northern Great Plains, as represented by the National Grasslands of western South Dakota. After determining the characteristics of habitats used by sharptailed grouse and greater prairie chickens in this area, a study to develop and evaluate methods of improving conditions on existing grouse range will be initiated.

Previous work in western South Dakota includes a prairie grouse habitat survey that was conducted from 1950 to 1958 (Janson 1953, Podoll 1955, Podoll 1957, Frary 1958, and West 1959).

PROCEDURE

The primary objective of this study is to define the characteristics of each habitat type used by grouse. To accomplish this a field form, utilizing 5 x 8-inch marginal punch cards, was designed to record physical and biological factors of known grouse habitats (Fig. 1). All major habitat types on the study area are visited periodically throughout the year, and a habitat classification form filled out each time a grouse or flock of grouse is observed. Only information on grouse presence is collected. The data yielded should contain valuable information on what habitat components are selected by grouse for each of their various annual activities. An attempt will be made to fill out cards on 1000 birds during this phase of the study.

DESCRIPTION OF STUDY AREA

The Fort Pierre and the Buffalo Gap National Grasslands are located primarily on the Pierre shale formation. Pierre shale was formed during the Cretaceous period, and is uniform, irregularly jointed, and bluish to dark gray in color. The shale rapidly weathers into flaky fragments that are often light brown in color and form a heavy "gumbo soil" (Perisho and Visher 1912).

The climate of these grasslands is severe. The annual precipitation ranges from 14-19 inches with 60 percent falling in the form of rain during April through July. The average temperature range is 150° annually and 40° daily (Perisho and Visher 1912).

The rolling grasslands in the study area appear to be similar but actually are composed of several vegetative types. The various types are listed in Table 1.

OBSERVER _____ No. OF BIRDS _____

DATE _____ No. OF EGGS _____

TIME _____ BIRD ACTIVITY _____

TEMPERATURE _____ POSIT. ON SLOPE

REL. HUMIDITY _____ % SLOPE

WIND SPEED _____ ASPECT

DIRECTION _____ MICRORELIEF

% CLOUD COVER _____ MACRORELIEF

PRECIPATION _____ DIST. TO OPEN WATER

LOCATION _____ S _____ T _____ R _____

PLANT COMMUNITY

SPECIES	IMP.	AV. HGT.	UTIL.	%COVER	PHEN

Figure 1.--A marginal punch card system is utilized to record physical and biological factors of known grouse habitats.

Table 1.--Vegetative types present on the National Grasslands of western South Dakota

Vegetative type	Dominant plant species
GRASS	
Short grass upland	Bouteloua gracilis and Buchloe dactyloides
Mixed grass upland	Stipa viridula and Agropyron smithii
Thin breaks	Andropogon gerardi, Andropogon scoparius, and Agropyron smithii
Clayey bottom land	Agropyron smithii, Spartina pectinata or Xanthium italicum
Reseedings	Agropyron cristatum (may be A. desertorum)
SHRUB	
Brushy draws	Symphoricarpos occidentalis, Prunus virginiana, Rosa spp., and Prunus americana
Sagebrush flats	Artemisia tridentata and Artemisia cana
TREE	
Juniper breaks	Juniperus virginiana or Juniperus scopulorum
Pine-covered ridges	Pinus ponderosa
River bottom	Populus sargentii, Ulmus spp., Fraxinus pennsylvanica, and other hardwoods
BARREN BADLAND CLIFFS	

PRELIMINARY FINDINGS

Some Characteristics of Sharp-tailed Grouse Habitat Types

At the time of this writing 77 cards have been filled out on 441 sharp-tailed grouse and 13 cards have been completed on 59 greater prairie chickens. The following discussion will only be concerned with the data collected on the sharp-tailed grouse.

Observations to date indicate sharptails use short grass areas in the spring for displaying while for other spring activities they use mixed grass types. Approximately 50 percent of the summer observations were in mixed grass types. However, a trend toward cropland use was noticed in late summer. By fall 50 percent of the observations were on cropland and during winter 55 percent of the observations were on cropland. Of the winter observations 30 percent were in trees along river bottoms (Tables 2, and 3).

Sharp-tailed grouse use at least six habitat types for their annual activities. Following is a brief description of each type including remarks on weather and vegetation height at the time the grouse were observed.

Short Grass

Short grass areas seem to be used primarily for displaying in the spring or in the fall. The average height of the short grass vegetation at the time of grouse observations was seven inches. Eighty percent of the observations were on a north or east aspect. The wind varied from 0-20 m.p.h. with an average of 9 m.p.h.

Table 2.--Number of sharp-tailed grouse observed in each vegetative type during the year (Preliminary findings: through July 1965)

Plant community	Number of sharp-tailed grouse				
	Spring	Summer	Fall	Winter	Total
Short grass	15	4	4	0	23
Mixed grass	21	53	5	5	84
Forb	3	14	3	5	25
Shrub	5	17	4	27	53
Tree	0	0	0	77	77
Cropland	0	21	17	141	179
Total	44	109	33	255	441

Table 3.--Sharp-tailed grouse observed in each vegetative type per season of year (Preliminary findings: through July 1965)

Plant community	Percent occurrence during each season			
	Spring	Summer	Fall	Winter
Short grass	35	4	12	0
Mixed grass	49	49	15	2
Forb	7	13	9	2
Shrub	9	15	12	11
Tree	0	0	0	30
Cropland	0	19	52	55
Total	100	100	100	100

Mixed Grass

Mixed grass type was used primarily during the summer but was used also during the spring for all activities except displaying. The average height of the vegetation was 16 inches. The wind speed varied from 0-25 m.p.h. with an average of 13 m.p.h. Aspects toward all directions were used, however, most observations were made on either a northeast, east, southeast, or south aspect.

Forb

The forb type consisted primarily of patches of yellow sweet-clover or of roadside cuts with a primary cover of kochia weed. Over 50 percent of the observations of grouse using a forb type were in the summer, however, the forb type was used at all seasons of the year. The average height was 23 inches. All observations have been on a north, east, southeast, or south aspect. Wind speed varied from 0-20 m.p.h. and averaged 8 m.p.h.

Shrub

Shrubs were used at all times of the year but a higher percentage of the observations were in the winter. The average height of the shrubs was 31 inches. Fifty percent of the observations were on a northwest aspect: the rest on a east or south aspect. Wind speed varied from 0-10 m.p.h. with an average of 4 m.p.h.

Tree

The only time grouse were seen in trees was in the winter. The trees averaged 38 feet high and were used when the wind was calm. The tree type in this area is located in the river bottoms. Birds were seen feeding in cottonwood and green ash trees.

Cropland

Cropland consisting of wheat, corn, sorghum, milo, and alfalfa was used during late summer with increasing use through the winter. The aspects of the cultivated areas varied from northeast, east, southeast, or south. The wind speed varied from 0-25 m.p.h. with an average of 11 m.p.h. The average height of the crops at the time of use was 17 inches.

SUMMARY

This phase of wildlife habitat research project on the National Grasslands is concerned with determining the habitat requirements of sharp-tailed grouse in western South Dakota. Data are collected on the physical and biological factors of habitat types used by grouse during each season of the year and during each activity of the grouse (such as displaying, roosting, nesting, feeding, and brooding).

A general look at the preliminary data shows sharp-tailed grouse select short grass types for spring and fall displays. Other spring activities are primarily concerned with the mixed grass type. A wide variety of types are used in the summer. The mixed grass is used more in early summer, but cropland received increased use during late summer. A variety of types are used in the fall, however, a high percentage of the observations were on croplands. Grouse used trees and cropland during the winter.

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